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" ..... per litora spargite muscum,
Naiades, et circùm vitreos considite fontes :
Pollice virgineo teneros hìc carpite flores :
Floribus et pictum, divæ, replete canistrum.
At vos, o Nymphæ Crateridès, ite sub undas ;
Ite, recurvato variata corallia trunco
Vellite muscosis e rupibus, et mihi conchas
Ferte, Deæ pelagi, et pingui conchylia succo."
N. Parthenii Giannettasii Ecl. 1.

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I.—*Remarks on some Algæ belonging to the Genus* Caulerpa.

By R. K. Greville, LL.D. &c.*

[With two Plates.]

AMONG the Algæ collected by Dr. Wight on the shores of the Peninsula of India are various *Caulerpæ*. Of described species the following may be enumerated: *Caulerpa Lessoni*, Bory; *plumaris*, Ag.; *scalpelliformis*, Ag.; *sedoides*, Ag.; *Chemnitzia*, Lamour., and *Freycinetii*, Ag.

There are also two or three other species upon which I propose to offer some remarks. The first of these is the plant described by Agardh as var. *β. crassifolia* of his *Caulerpa taxifolia*; at least there can be no doubt that it is the form quoted by him, and figured by Turner in 'Historia Fucorum,' tab. 53, as *Fucus pinnatus* of Linnæus. I am, however, very sceptical of its having any specific relation to *C. taxifolia*, typical specimens of which I possess from Agardh and Hornemann. The frond of the latter is pinnated in a definite, symmetrical and uninterrupted manner, answering well, in fact, to Agardh's description: "pinnis æqualibus simplicibus fere horizontalibus, parallelis .... basi apice-

* Read before the Botanical Society of Edinburgh, April 14, 1853.

que attenuatis, oppositis, approximatis." The Indian plant, on the contrary, is remarkably straggling and irregular in its habit; the pinnæ remote, often interrupted, unequal in length, and instead of being nearly horizontal are given off at a considerable angle, with a decurrent base. Turner has well remarked of this plant, that "young specimens are entirely destitute of pinnæ, and resemble in their naked filiform branches, as well as in their colour, texture and substance, battered plants of *Chara flexilis*. Judging from some of Dr. Wight's specimens, it is not improbable that even older individuals may retain this form when vegetating in situations unfavourable to their perfect development. It may be added, that, as far as I am aware, the true *C. taxifolia* is a native of the West Indies, while the Alga under consideration has only been found in the Red Sea and in the East Indies.

Presuming then that Turner and Agardh are correct in regarding our plant as the *Fucus pinnatus* of Linnæus, I venture to suggest that it take its place in the genus as *Caulerpa pinnata*. A figure representing the frond in a somewhat younger state than in Turner's work will be found in one of the plates which accompany this paper (Pl. I.).

Before I proceed to describe the remaining *Caulerpæ* referred to in Dr. Wight's collection, there is another Alga of which it is desirable to take some notice in connexion with the preceding species. This is a very beautiful plant which was communicated to me by Professor Mertens, many years ago, as collected at the island of St. Thomas in the West Indies, and likewise named *Fucus pinnatus* of Linnæus. It is, nevertheless, as far removed from *Caulerpa pinnata* above mentioned as from *C. taxiformis*. It is closely and regularly pinnate, the pinnæ oblong-obovate and more or less falcate as in *C. scalpelliformis*, but (unlike those of the latter) given off horizontally; and the frond is besides truly pinnate, not pinnatifid. For this plant I propose the following character:—

Caulerpa asplenioides (nobis); frondibus pinnatis, pinnis oppositis, subhorizontalibus, obovato-oblongis, falcatis, obtusis, abrupte apiculatis.
Caulerpa taxifolia, var. *crassifolia*, Ag.
Fucus pinnatus, L. Mertens in litt.

Although my friend Agardh has in his description of *C. taxifolia* quoted Turner's figure of *Fucus pinnatus* as a representation of his variety *crassifolia*, I cannot help assuming that he included our present plant also, for under *Caulerpa scalpelliformis* he remarks, "Simillima Caulerpæ taxifoliæ, var. crassifoliæ, sed distincta fronde magis confluente, potiusque pinnatifida quam pin-

nata, pinnis obtusis, crassis." I may add in conclusion that the stems and branches of *C. asplenioides* are comparatively tough and opake, and bear no resemblance to those of *C. pinnata*, which Turner has so graphically compared to battered plants of *Chara flexilis*.

In order to assist in confirming my views regarding these species, I refer to the illustrations on Plate I., viz.—

Caulerpa taxifolia. Fig. 1. A portion of the frond, natural size. Fig. 2. A portion magnified.
Caulerpa asplenioides. Fig. 1. A portion of the frond, natural size. Fig. 2. A pair of the pinnæ magnified.

Caulerpa laxa (nob.) ; frondibus simplicibus, ramentis lineari-clavatis apice rotundatis undique laxe imbricatis.
Hab. in mari Peninsulæ Indiæ Orientalis ; Wight.

This species is allied to *Caulerpa clavifera*, but is altogether a more slender plant. It has, indeed, a moss-like habit, at least after having been dried, quite unlike *C. clavifera*, with authentic specimens of which I have compared it ; and still more unlike *Fucus Lamourouxii* and *Fucus uvifer* of Turner, which are considered as varieties of that species by Agardh. The ramuli vary considerably in different individuals with regard to their length and in the degree in which they are thickened upwards ; but they are always gradually clavate and rounded at the extremity ; a double character which at once separates it from *Caulerpa Selago* and its allies, including a beautiful new species (*C. furcifolia*, Harv.) collected in New Zealand by Dr. Sinclair, and presented to me by my friend Mr. William Gourlie.

Plate II. fig. 1. *Caulerpa laxa*, natural size. Fig. 2. Ramuli magnified.

Caulerpa fissidentoides (nob.) ; frondibus compacte pinnato-pectinatis ; pinnis adscendentibus, linearibus, obtusis, apiculatis, oppositis.
Hab. in mari Peninsulæ Indiæ Orientalis ; Wight.

It is with very considerable hesitation that I venture to separate this plant from *Caulerpa plumaris*, and I confess that I am unable to define it satisfactorily. At the same time the habit is very different, closely resembling that of a gigantic *Fissidens*. It is more rigid and less slender in all its parts than *C. plumaris*, the pinnæ shorter and much less capillary, and although given off horizontally as in that plant, they immediately assume a more upward direction. The rachis too (if I may be allowed the term for convenience sake) is relatively broader, so that the pinnæ are often not more than equal to twice or thrice the width of that part. I am not disposed, however, to lay much stress upon the length of the pinnæ, because this character is extremely va-

riable. In specimens of *C. plumaris* from the West Indies communicated by Agardh and Mertens, the pinnæ are very nearly twice as long as in other specimens from the East Indies and the Cape of Good Hope; and we must not forget that their extreme length (nearly 1 inch) forms the only specific difference of *Caulerpa longifolia*, an Australian species. With regard to the pinnæ of these perplexing forms I may further add, that, in not being attenuated at the base, they are completely separated from *Caulerpa taxifolia*.

Plate II. fig. 1. *C. fissidentoides*, natural size. Fig. 2. A portion of the frond magnified.

II.—*On the Genus* Truncatella. By William Clark, Esq.

To the Editors of the Annals of Natural History.

Gentlemen, Exmouth, June 8, 1853.

Mr. Wm. Thompson of Weymouth has this day favoured me with some lively examples of the rare *Truncatella Montagui* in its adult and young states, that is, before and after the truncature of the apex, and also others of the still rarer *Rissoa littorea* of authors; these, though sent by post in moistened weed, which however was quite dry when received, on being put into sea water immediately deployed the organs. The first has been described by the Rev. R. T. Lowe, many years ago, in the 5th volume of the 'Zoological Journal,' p. 303; and the *R. littorea* by the learned authors of the 'British Mollusca' in the Appendix, vol. iv. p. 265; still, as my account contains many new particulars, and notes a difference of opinion in respect of the generic position of *R. littorea*, I have thought it would be agreeable to some of your readers to have an accessorial description of these rare creatures from a fresh though inferior hand, especially as the present notes exhibit a comparative view of both animals, which were examined for two days in the same vase under very favourable circumstances. It is singular that these species, both undoubted Pectinibranchiata, should inhabit at high water level, in company with *Conovulus denticulatus* and *C. bidentatus*, both Pulmonifera, and are, as Mr. Thompson has informed me, "decidedly amphibious," being often found far above that limit; but I apprehend not more so than many of the minuter *Littorinæ*, particularly *L. neritoides*, which are attached to rocks for long periods, perhaps during their whole existence, above the highest tides and even beyond the reach of the spray, living apparently on the floating saline moisture. It would appear then that the two